

Attorney Docket No. LUKP:114US
U.S. Patent Application No. 10/711,245
Reply to Office Action of October 31, 2005
Date: January 30, 2006

Amendments to the Drawings

The Examiner objected to Figure 6 for mislabeling boxes in the flowchart contained in that figure. The attached drawing sheet includes changes to Figure 6. This Replacement Sheet, which includes only Figure 6, replaces the original sheet including Figure 6. In Figure 6, the two bottom boxes now state "Pulling Downshift" and "Pushing Downshift", respectively, instead of "Pulling Upshift" and "Pushing Upshift". The drawing sheet containing Figure 6 is attached in the **Appendix** following the **Remarks** in the instant Reply. These changes add no new matter and Applicant respectfully requests removal of the objection to Figure 6.

Remarks

The Rejection of Claims 1-8 and 14-22 Under 35 U.S.C. § 112

The Examiner has rejected Claims 1-8 and 14-22 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claims the subject matter which Applicants regard as their invention.

Claims 1, 3, 8 and 15

The Examiner rejected Claims 1,3,8 and 15 for use of terminology that lacked antecedent basis. Claim 3 has been cancelled rendering the rejection moot, and the other claims listed above have been amended to address the rejections. The amendments to the claims are detailed above in the Current Status of the Claims.

Claim 14

The Examiner rejected Claim 14 for lack of disclosure regarding variables in the claim. In paragraph 0014, the variables T_{eng} and J_{eng} are both disclosed. In paragraph 0016, the variables i_A i_B , i^2_A are all disclosed. The variable T_{clA}^{slip} is disclosed in paragraph 0018. In paragraph 0019, variable $T_{vehicle}$ is disclosed. The variable T_{clB} is disclosed in paragraph 0024. Thus, all the variables in the claim are disclosed in the specification.

Claim 16

The Examiner rejected Claim 16 for failing to clarify which clutch is referenced in the claim. Claim 16 now specifies that the clutch referenced is the second clutch.

Claim 17

The Examiner rejected this claim for failing to distinguish which clutches were being referenced in claim. The amended claim language clearly recites that the first clutch is the clutch referenced in the claim.

Claim 18

The Examiner rejected Claim 18 for lack of disclosure regarding variables in the claim. Variables $T_{vehicle}$ and $J_{vehicle}$ are each disclosed in paragraphs 0023 and 0034 respectively. Variables $\dot{\omega}_{vehicle}$, ω_{eng} , $\omega_{vehicle}$, T_{clA} , T_{clB} , i_A and i_B are each disclosed in paragraph 0024. Thus, all the variables in the claim are disclosed in the specification.

Claims 19-22

These claims were rejected for instances of lacking antecedent basis and inconsistencies in the labeling of clutches in the claims. Claims 19-22 have been amended to adopt the convention of calling one clutch the “first clutch” and another clutch the “second clutch” to address the lack of antecedent basis that the Examiner cited, and to bring consistency to the claims in the application.

Accordingly, withdrawal of the rejections of Claims 1-8 and 14-22 under 35 USC §112, second paragraph is appropriate and respectfully requested.

The Rejection of Claims 1-2 and 6-8 Under 35 U.S.C. § 102(b)

The Examiner rejected Claims 1-2 and 6-8 as being anticipated by DE 43 33 899 (*Zhang*). *Zhang* discloses an automatic transmission with several gears formed by one or more sets of planet gears. Applicants do not agree with the Examiner regarding the rejection, however, to expedite allowance, Applicants have amended Claim 1 by incorporating the limitations from Claim 3, which the Examiner indicated was allowable subject matter. Claim 1 now is condition for allowance. Claims 2 and 6-8 are dependent from Claim 1 and thus incorporate all the limitations of that claim. Therefore, *Zhang* also fails to anticipate Claims 2 and 6-8. Accordingly, withdrawal of the rejections of Claims 1-2 and 6-8 under 35 U.S.C. §102(b) is appropriate and respectfully requested.

Claim 1 does not recite an automatic transmission. Rather, Claim 1 recites a “twin-clutch transmission having as least two transmission input shafts, two of said input shafts are coupled via first and second clutches, respectively to the engine.” An automatic transmission has discrete gears that are actuated by clutches that fix a part of the planet gear. For example, during a change of gears, a clutch connecting a planet gear-carrier with the housing is opened, and a clutch connecting the ring gear to the housing is closed. *Zhang* discloses clutches that are slipping during the change of gears to avoid uncomfortable behavior of the car. The invention recited in Claim 1 uses a double clutch in a parallel shaft gear, which accomplishes an opposite function. The intention of the present claimed invention is to minimize the amount of time that oil clutches are in a slipping state and to bring the clutches to complete adhesion very quickly. In an automatic transmission those states have to address fuel consumption and transmission

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efficiency. For a parallel shaft gear it may be important to keep slip on one or both clutches to avoid blocking of the transmission. This is because a further elastic connection, which is comparable to a torque converter in an automatic transmission, is not available. Therefore, the need for an adhesion limit in an automatic transmission is not necessary or disclosed by *Zhang*.

Furthermore, Claim 1 specifically recites that the first clutch is disengaged up to a slip limit. *Zhang* does not teach or even use the term “slip limit” anywhere in the patent. This is an essential element of how the first clutch is disengaged in the invention recited in Claim 1 and it is advantageous that the calculations of the slip limits of the clutches are done in this way. By implementing the claimed method for carrying out gear shifting, transmission control is accomplished in the simplest possible way. Therefore, the method of shifting claimed in the present application is more efficient. By implementing the step of disengaging the first clutch up to a slip limit the present invention adds a feature, not taught or suggested by *Zhang*, since *Zhang* fails to disclose a twin-clutch transmission.

Conclusion

For all the reasons outlined above, Applicants respectfully submit that the claims are patentable over the cited references and in condition for allowance, which action is courteously requested.

Respectfully submitted,



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Appendix